

## Problem A: The Rolling Boulder

*Note: for an unified PDF with the problems and information about the contest, please visit [this website](#)*

Dr. Indiana Jones, the famous professor of archaeology, has just secured a golden idol from an ancient Temple in the depths of a South American forest. Alas! Things are not as easy as snatching the idol and walking out of the place. Indiana has to escape the temple before a giant boulder blocks the only exit, or even worse, crushes him under its weight.



Figure 1: Indy outrunning the boulder

Indiana starts running from a certain point that is  $I$  meters ahead of the boulder. He maintains a constant speed of  $V$  meters per second, running towards the exit, which is located  $E$  meters from the boulder.

The boulder is on a slightly inclined plane, and its initial speed is zero, but starts moving with an horizontal acceleration of  $A$   $m/s^2$ .

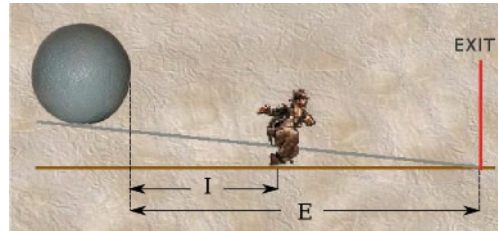


Figure 2: Model of the situation

Will Indiana escape from the temple? And if he does get out in time, how close is his escape?

### Input

Input starts with a positive integer  $T$ , that denotes the number of test cases ( $T \leq 2000$ ).

Each test case is represented by four floating point numbers in a single line. These numbers are, in order:

- $I$ : The distance in meters between the boulder and Indiana.
- $E$ : The distance in meters between the boulder and the exit.
- $V$ : Indy's constant speed, in meters per second.
- $A$ : The boulder acceleration, in meters per second squared.

$0 < V \leq 100$  ;  $0 < A \leq 10$  ;  $0 \leq I \leq E \leq 1000$

All numbers will have two digits after the decimal point.

## Output

For each test case, print the case number, followed by a message as follows:

If Indy can escape the temple, print **Indy escapes by  $\#.\#$  s**, where the number is the time (in seconds) from the moment Indy reaches the exit, until the boulder does the same. Print this value as a real number with exactly one digit after the decimal point. If Indy and the boulder reach the exit at the same time, then it can be assumed that Indy successfully escaped.

If the boulder reaches the exit before Indy can get out, print **Indy can't escape**.

## Sample Input

```
2
60.00 150.00 6.00 1.31
60.00 150.00 6.00 1.50
```

## Output for Sample Input

```
Case 1: Indy escapes by 0.1 s
Case 2: Indy can't escape
```